The Effect of Alternative Partial Benefits Formulas on Beneficiary Part-Time Work Behavior

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ACKNOWLEDGMENTS

CONTENTS

PARTIAL BENEFITS FORMULAS UNDER THE UNEMPLOYMENT INSURANCE SYSTEM AND PART-TIME LABOR SUPPLY

I. INTRODUCTION

The federal-state unemployment insurance system, which was brought about by the Social Security Act of 1935, has been criticized recently for providing work disincentives. Papers by Feldstein (1976), Classen (1977), Ehrenberg and Oaxaca (1976), and Hoelen (1977) have addressed the question of the effect of unemployment insurance on the duration of spells of unemployment as well as the frequency with which spells of unemployment occur. These papers have been, at least in part, in the spirit of job search models of unemployment, in which availability of unemployment insurance benefits reduces the costs of searching. In this study, on the other hand, the simple static model of labor supply is maintained and the incentives for part-time labor supply under different partial benefit formulas in existence are examined. A simple model of the allocation of time is set up and predictions about part-time work under the types of budget constraint implied by the UI partial benefits formulas are worked out. In fact, only two partial benefits formulas are empirically relevant. There are other formulas, which imply different budget constraints, but as described in Section II, the predictions for workers' behavior are the same as the predictions from one of the two basic formulas. That only two basic formulas are used is of some interest, both because the fact has not been recognized in some of the discussions of unemployment insurance,

and because it simplifies considerably the problem of analyzing the
effect of different partial benefit formulas. Under one of the formulas
part-time earnings are ignored up to a certain amount, called the
disregard, then further part-time earnings are taxed at 100 percent.
This system is by far the most prevalent. The other system reduces the
weekly benefit amount by a fraction of part-time earnings. The
latter system is widely thought to be more efficient at providing
incentives for part-time labor supply than the former, and is of interest
in designing "efficient" welfare policies; it occurs only in a few
states (Connecticut, Kentucky, Nevada, and Washington).[1] Partial
payment formulas for all states are given in Table 1A.

The predictions of the model are then compared with data
on individuals in four states: Pennsylvania, Illinois, Nevada, and Oregon.
These data sets were obtained from state records and contained information
on work histories for the years 1973 through 1976. There are about
65,000 observations available; a large number of observations is necessary
because only about 15 percent of the people who receive unemployment
insurance payments ever receive a partial payment due to a reduction
because of outside earnings. A key question, directly relevant to
this study, is the prevalence of unreported part-time earnings
among unemployment insurance recipients. The gains to concealing part-
time earnings are large indeed; in Oregon, 100 percent of the amount
earned above a disregard is taxed; in Nevada, this figure is 75
percent. Given the gains to not reporting part-time earnings, there
is likely to be an underreporting of the extent of part-time work.
Studies, such as the present one, are likely therefore to overstate

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[1]Washington also has a flat disregard.

TABLE 1A

WEEKLY BENEFITS FOR PARTIAL UNEMPLOYMENT

State (1)	Definition of partial unemployment: week of less than full-time work if earnings are less than (2)	Earnings disregarded in computing weekly benefit for partial unemployment (3)	State (1)	Definition of partial unemployment: week of less than full-time work if earnings are less than (2)	Earnings disregarded in computing weekly benefit for partial unemployment (3)
Alabama	wba	$6	Nebraska	wba	Up to 1/2 wba[a]
Alaska	Basic wba + greater of $10 or 1/2 basic wba	Greater of $10 or 1/2 wba	Nevada	wba	1/4 wages
			N. H.	wba	1/5 of wba
Arizona	wba	$15	N. J.	wba + greater of $5 or 1/5 wba	Greater of $5 or 1/5 wba
Arkansas	wba + 2/5 wba	2/5 wba	New Mex.	wba	1/5 wba
California	wba	$18	New York	--[c]	--[c]
Colorado	wba	1/4 wba	No. Car.	wba + 1/2 wba[d]	1/2 wba
Conn.	1-1/2 x basic wba	1/3 wages	No. Dak.	wba	1/2 wba
Delaware	wba + greater of $10 or 30% of wba	Greater of $10 or 30% of wba	Ohio	wba	1/5 wba
			Oklahoma	wba + $7	$7
D. C.	Basic wba	2/5 wba	Oregon	wba	1/3 wba
Florida	wba	$5	Pa.	wba + greater of $6 or 40% wba	Greater of $6 or 40% wba
Georgia	wba + $8	$8			
Hawaii	wba	$2	P. R.	2 x wba[d]	wba
Idaho	wba + 1/2 wba	1/2 wba	R. I.	Basic wba + $5	$5
Illinois	wba	$7	So. Car.	wba	1/4 wba
Indiana	wba	Greater of $3 or 1/5 wba from other than base-period ERs	So. Dak.	wba + 1/2 wba	1/2 wages up to 1/2 wba
			Tenn.	wba	$10
Iowa	wba + $6	$6	Texas	wba + greater of $5 or 1/4 wba	Greater of $5 or 1/4 wba
Kansas	wba	$8			
Kentucky	1-1/4 x wba	1/5 wages	Utah	wba	Lesser of $12 or 1/2 wba from other than regular ER
La.	wba	1/2 wba			
Maine	wba + $5	$10			
Maryland	Augmented wba	$10	Vermont	wba + $10	$15 + $3 per dep. up to 5
Mass.	Basic wba + $10	$10	Virginia	wba	Greater of $10 or 1/3 wba
Michigan	wba	Up to 1/2 wba[a]			
Minnesota	wba	$25	Wash.	1-1/3 x wba + $5	1/4 wages over $5
Miss.	wba	$5	W. Va.	wba + $25	$25
Missouri	wba + $10	$10	Wis.	wba	Up to 1/2 wba[a]
Montana	--[b]	--[b]	Wyo.	Basic wba	$10

[a] Full weekly benefit is paid if earnings are less than 1/2 weekly benefit; 1/2 wba if wages are 1/2 weekly benefit but less than weekly benefit.

[b] No provision for partial unemployment. An individual is considered totally unemployed in a week in which remuneration of less than twice the wba is received and no more than 12 hours of work.

[c] Benefits are paid at the rate of 1/4 the wba for each effective day within a week beginning on Monday. Effective day defined as 4th and each subsequent day of total unemployment in a week in which claimant earns not more than $95.

[d] In North Carolina week of less than the equivalent of 3 customary scheduled full-time days. In Puerto Rico week in which wages, or remuneration from self-employment, are less than twice claimant's wba or the claimant performs no service for a working period of 32 hours or more in a week.

SOURCE: This is Table 306 in "State Unemployment Insurance; Legislative Change in 1976." Monthly Labour Review, Feb., 1977.

the true effect of any differences in labor supply due to differences in benefit formulas if the extent of underreporting is related to the tax rate on part-time earnings. Data limitations preclude a full treatment of the issues raised by underreporting of earnings and thus the results of this study should be interpreted as pertaining to reported part-time earnings.

The plan of the report is as follows. In Section II, a simple model of labor supply is set forth and the implications of alternative UI benefit formulas are discussed. The model is the standard labor-leisure choice problem: at any instant, individuals are confronted with a choice between working more hours or spending more time in non-market activities, which are collectively termed "leisure" in this study. The major factor which influences an individual's decision (apart from preferences about work) is the net wage received. Other things equal, a higher net wage rate makes the cost of engaging in non-market activities more expensive and will lead to a greater supply of labor. The formulas used to determine UI benefits may have an effect on labor supply because they affect the net wage received by individuals. For example, in a state like Nevada, an individual receiving a weekly benefit amount of $50 and offered 10 hours of work at $4 per hour would, if he accepted work, find his UI payments reduced by $30 ($40 x .75). His net earnings for the week would then be $60. Since he could have had $50 without working, his net wage is $1 per hour. If this individual faced the same circumstances but resided in Oregon and chose to work, he would have received $40 pay, but his UI benefits would be reduced to $26.67. The net gain in earnings for 10 hours of work is $6.67, which implies a net average hourly wage of $.67. The weekly benefit amount is reduced to $16.67 because Oregon allows individuals to earn

up to 1/3 of the weekly benefit amount (= $50/3 = $16.67 in this case) but reduces UI payments dollar-for-dollar for all earnings above this level so long as the weekly earnings do not exceed the weekly benefit amount. Note however that this same individual would receive earnings of $66.67 if he worked 5 hours instead of 10: working 5 hours would produce $20 in wages plus $46.67 (= $50 - ($20 - $16.67)) in UI benefits. All hours in excess of 5 result in a net wage of zero.

Finally, consider the same individual if he resided in Pennsylvania where the disregard is 40 percent of the weekly benefit amount. For 10 hours of work he would receive $40 pay and his UI benefits would be $30 (= $50 - ($40 - $20)). However, his total earnings would be $70 if he worked only 5 hours.

The example illustrates the potential ways that differences in UI benefits can affect labor supply. One would expect, for example, that if an individual worked part time he would work fewer hours in states which have implicit taxes of 100 percent over some disregard level because the net wage goes to zero very quickly. Unfortunately, this cannot be tested because information on hours worked is not available. Whether an individual will work at all will depend upon the rate of taxation and the amount of the disregard. This is an empirical question that is the central focus of this study. Since states which use a disregard employ different levels of disregard, it is possible to make comparisons both across levels of disregard and between a state which uses a disregard and one which uses only a constant tax on earnings.

The empirical findings of this study can be previewed as follows:

o The empirical results generally support the hypothesis that higher disregards encourage part-time labor supply. After controlling for numerous personal and industry characteristics, the results

indicate that part-time work is most prevalent, among the three states studied with earnings disregards, in Pennsylvania, followed by Oregon, and least prevalent in Illinois. Pennsylvania has the highest disregard, and Illinois the lowest, of the states studied.

o In comparing the states which use a disregard with the state in the study, Nevada, which uses a constant tax rate, no clear cut superiority of either method was obvious. Part-time labor supply was generally more common in Nevada than in Oregon or Illinois, but was less common than in Pennsylvania.

o Although statistically significant differences in the probability of working part time existed among the states, these differences were quantitatively small--on the order of 1-10 percent for any given year. In particular, the differences were small relative to the cyclical variations in part-time work within states over time.

The results of this study lead to the following policy recommendations. Assuming the objective is to increase the supply of part-time labor or equivalently reduce disincentives to work, then there is no obvious gain to encouraging a switch from a formula which uses a disregard to one which uses a constant tax rate. The evidence does support a conclusion that a general increase in the disregard and by extension, a general decrease in a constant tax rate, will lead to greater labor supply.

II. THE STATIC THEORY OF PART-TIME LABOR SUPPLY UNDER THE UNEMPLOYMENT INSURANCE SYSTEM

There are two major types of formulas for the payment of partial unemployment insurance benefits to part-time workers as far as observable implications on labor supply are concerned. Essentially, one type ignores part-time earnings (usually defined as earnings less than the weekly benefit amount the individual would receive if not working) up to a certain amount, the disregard, then taxes further part-time earnings at 100 percent. The other system reduces benefits by some percent of part-time earnings. The latter is widely thought to be more efficient at providing incentives for part-time labor supply than the former. Most of the state formulas fall directly into the first category, differing only in their disregards. The second system is of interest in designing "efficient" welfare policies, but it is used in only a few states. Labor supply functions under these formulas are developed graphically below.

The Theory of Labor Supply

The amount of labor an individual will supply in any given period is chosen on the basis of the offered wage so as to maximize individual utility. Suppose utility is defined over leisure 1 and a composite of market goods X. The marginal utilities of 1 and X are assumed to be positive and decreasing. These assumptions imply that the indifference curves used below (curves giving the constant-utility

tradeoff between X and 1) are convex to the origin. The budget constraint

faced by an individual in the absence of UI and property income is

$$pX + wl = wT$$

where p is the price of the composite good X, w is the wage rate and

T is total time available. Hours of work h equals T-1. This is just

a line in the X-1 plane as seen in Figure 1.

$$slope = \frac{-w}{p}$$

$$U(X,1) = U_0^1$$
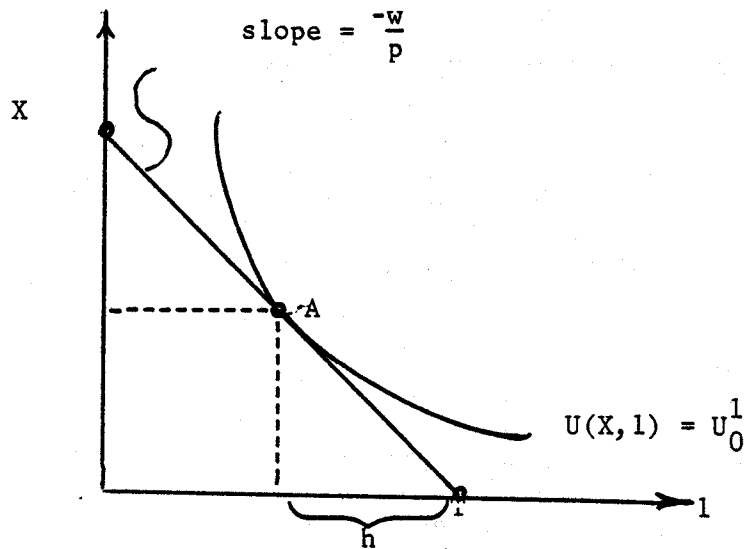
Figure 1

An indifference curve is also shown. The point A gives the amounts

of X and 1 (and therefore hours of work h) which give maximum utility

but which lie on the budget constraint. The effect of changing the

wage on labor supply may be examined by changing the budget constraint

corresponding to a wage change (an increase in the wage increases the

X-intercept while leaving the 1-intercept unchanged) and observing the

new optimal amounts of X and 1. This can be done repeatedly and a

labor supply curve can be constructed as in Figure 2. With the introduction

into the model of Unemployment Insurance the budget constraint is

changed but the procedure used to construct the labor supply curve

remains unchanged.

w

h
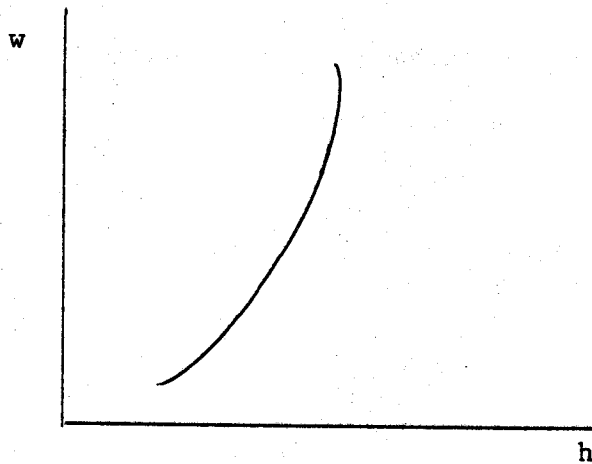
Figure 2

Labor Supply with Unemployment Insurance

Labor supply under the most widely used formula is considered

first. Under this system part-time earnings below a disregard, d, are

ignored and the individual is paid the weekly benefit amount (wba)

he would be entitled to without working. Earnings above the disregard

but below the weekly benefit amount are taxed at a 100 percent rate--

that is, the benefit paid is reduced by one dollar for each dollar

of earnings above the disregard. When earnings are greater than or

equal to the weekly benefit amount, the payment is zero. This last

provision implies that there is a tax of greater than 100 percent at

the wba level. For example, an individual earning one dollar less

than the wba would get a payment equal to the disregard plus one dollar--

his total income from earnings and UI benefits would be wba + d. If

he earned another dollar he would get no UI payment and his total income

would be wba. As shown below, this property of the benefit formula

presents no additional empirical difficulties. Figure 3 is a graph

of the budget constraint under this system (the price of the good X

has been set to one to simplify the graph).
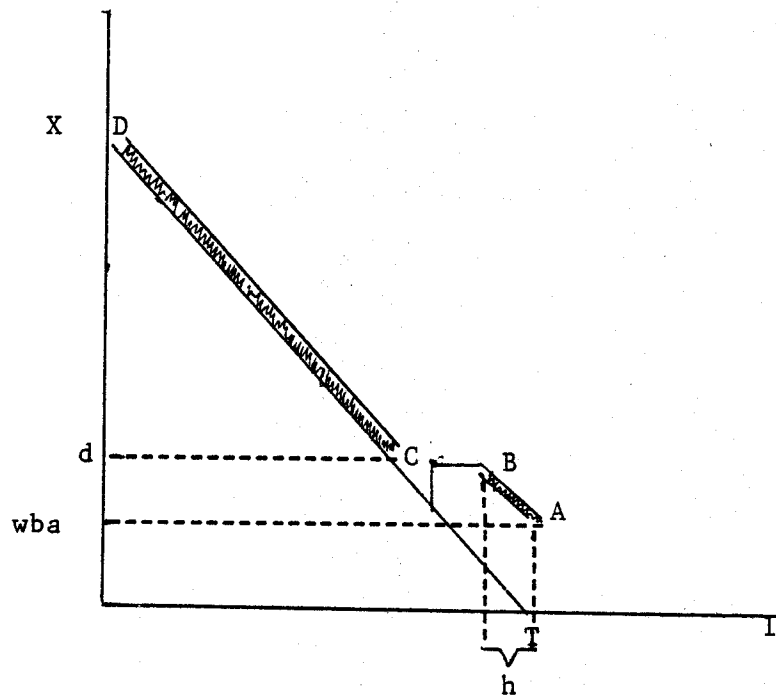
Figure 3

The budget constraint in the absence of UI is shown for comparison.
The relevant portions of the constraints are shaded. The effect of
this system is for practical purposes simply to shift the portion of
the budget constraint between the weekly benefit amount and the disregard
to the right. Thus an individual with zero hours of work would be
at point A and would consume wba units of X. Someone with different
preferences might be willing to trade leisure for X along the segment
AB; at B earnings are equal to the disregard and consumption of X is
equal to wba + d. Hours of work at point B are given by h. Another
person with different preferences might choose a point on the CD line
segment. In this case no benefits are paid. The important thing to
notice is that the points on line segment BC (and the points directly
below due to the cutoff of benefits when earnings reach the wba) are
not attractive allocations (except for point B). For any point on

the segment between B and C the individual could consume more leisure, by moving to point B, without giving up any goods. Since we assume that leisure has positive marginal utility the relevant portions of the budget constraint are the segments AB and CD.

The labor supply curve induced by this benefit payment system can be derived by changing the budget constraint corresponding to a change in the wage rate and observing the hours of work chosen corresponding to each rate. Since the slopes of the sections of the budget constraint are the same ($-w$), the effect of a change in the wage is to shift point B to the right and point C to the right (and closer to B). The point D shifts up. When someone is at point B and the wage increases the effect is either to reduce hours smoothly or to shift to full-time work, i.e., line segment CD. A labor supply for a given individual is given in Figure 4. Segment 1 of the labor supply

w

2

1

h
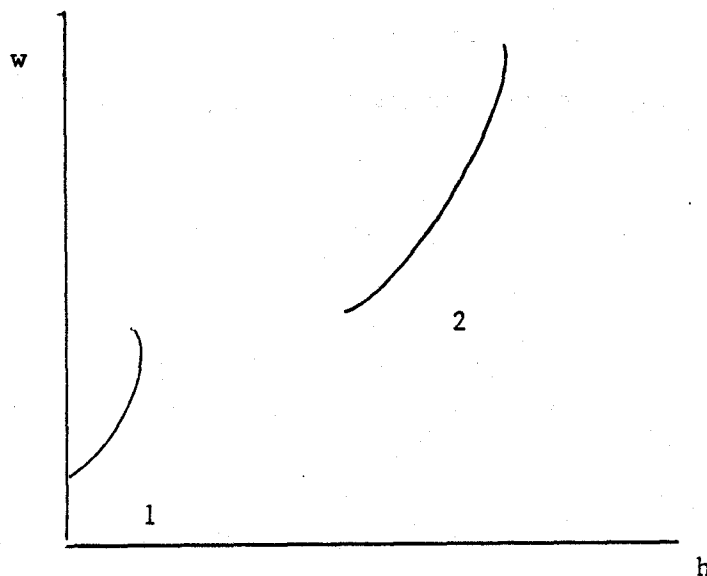
Figure 4

curve corresponds to allocations along segment AB of the budget constraint. Beginning at point A with zero hours of work, as the wage increases hours increase until point B is reached (or perhaps before for some preferences); then hours decrease until the wage offer is high enough to induce a switch to segment CD of the budget constraint or segment 2 of the labor supply function.

Notice that the labor supply implications are the same no matter what the shape of the budget constraint is between points B and C as long as the constraint is below the segment BC. In particular, the states Wisconsin, Nebraska, and Michigan have partial benefit formulas which differ from this one only in the budget constraint between B and C. The difference is that while the above formula implies only one jagged section below BC these states have formulas which imply several. Thus the behavioral implications are the same.

The other major type of formula is a fractional tax on part-time earnings. Under this formula all part-time earnings are taxed; for example the benefit payment in Nevada is reduced by .75 times earnings. The corresponding budget constraint is graphed in Figure 5. As drawn,
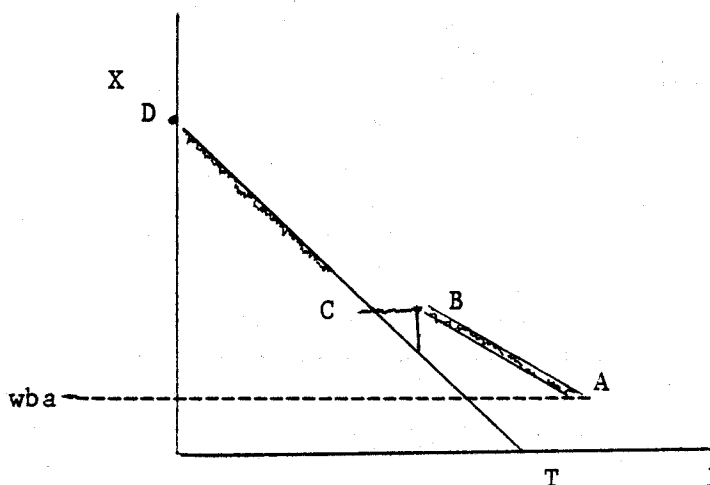
Figure 5

partial benefits are available as long as earnings are below the wba.
Again the relevant part of the constraint consists of segments AB and
CD. The difference between this constraint and the previous one is
that the slopes of the two segments of the budget constraint are different
under this system. Again, the labor supply curve can be derived by
varying the wage. Figure 6 gives the labor supply curve corresponding
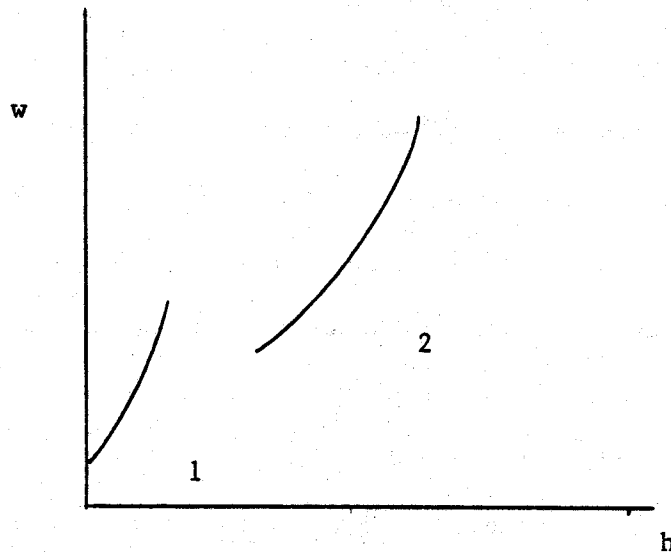
Figure 6

to this partial-benefit system. Segment 1 of the labor supply curve
corresponds to allocations along AB; segment 2 to allocations along
CD. Curve 2 will be the same under the two forumlas, except that the
wage at which the switch occurs may (and will in general) be different.

Extensions and Empirical Implications

The empirical implications of this simple model are strong.
In this framework workers under an unemployment insurance system like
that of Oregon, Illinois and Pennsylvania would never have incentive
to have part-time earnings leading to a reduction in this benefit
amount. Consequently, the implication for these states is that workers
would never receive partial payments due to outside earnings, simply
because the worker in such a situation could reduce his working hours,
thus increasing his leisure time without reducing his income. Workers
under the system such as Nevada's, on the other hand, would have an
incentive to provide part-time labor supply, albeit perhaps a small
incentive. As will be seen in the next section, the implications that
no worker in Oregon, Illinois, or Pennsylvania have part-time earnings
above the disregard is not borne out by the data. The rest of this
section discusses extensions of the simple model, which allow for part-
time earnings above the disregard in all states while maintaining the
implication that workers under a system such as that of Nevada are
more likely to supply part-time labor.

One such extension is the relaxation of the assumption that
hours are really continuously variable. In the above analysis it was
assumed that the workers could supply any number of hours desired at
a fixed wage, i.e., they can locate anywhere on the budget constraint.

In Figure 3, for example, it was assumed that people could
choose hours freely, and therefore, hours worked would always correspond
to points on the DC or BA section of the budget constraint. Hours
would never be chosen in the interval between C and B.

In Figure 7, a situation with constrained choice of hours is
illustrated. Under the continuously varying hour assumption, the
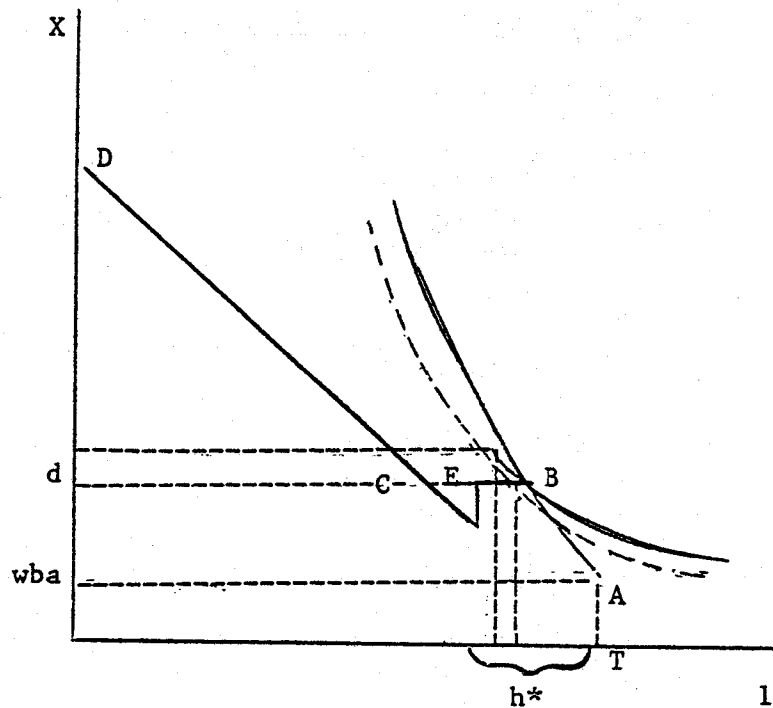
Figure 7

individual with the indifference curves pictured in Figure 7 and facing

the wage corresponding to the budget constraint in Figure 7 would choose

hours corresponding to point B on the budget constraint. But now suppose

that point B was not available. This could arise because the workers

require fixed costs of hiring and employers don't want to undergo those

fixed costs unless the employees work a certain number of hours. The

budget constraint facing the worker then consists essentially of the

point E in Figure 7 and the line segment CD. Facing such budget con-

straints the utility maximizing worker will work h* hours, correspon-

ding to point E of the budget constraints and will be having deductions

taken from his unemployment insurance check. The amount deducted from

this worker's check is equal to EF, exactly the amount of earnings

over the disregard d. Allowing for the possibility some workers face

constraints on the number of hours they can supply at any given wage thus blurs the sharp implication of the simple model that no worker in Oregon, Illinois, or Pennsylvania will do enough part-time work to have his checks reduced. With hours constraints it may be optimal for workers to work part time with earnings above the disregard and have their checks reduced correspondingly.

The introduction of hours constraints while allowing for the possibility that workers will have partial payment under all formulas can have an undesirable effect of making the ranking of the two formulas in terms of their incentives for labor supply ambiguous. This is not generally recognized, but its implications for the design of welfare systems are important and should be investigated. The reason for the ambiguity is because the choice of hours of work has become discreet. To see what is going on, we turn to Figures 3 and 5 and suppose that hours are constrained so that the only available part-time work corresponds to a point slightly to the left of B on the BC line segment in Figure 3. The marginal tax rate in Oregon for a worker on this point is 100 percent and he is having deductions taken from his unemployment benefits check as discussed in connection with Figure 7. However, the worker's total income is wba in Oregon; on the other hand, in Nevada, the corresponding income for that number of hours worked would be considerably less, indeed, it would be approximately wba + .25 x d plus a little bit more. Consequently, if this was the only part-time work available, we might find optimizing behavior on the part of workers leading to more part-time labor supply with earnings above the disregard in Oregon than we would in Nevada. In the extended model, with hours constraints,

therefore, a question of the effect of partial benefits formula on part-time labor supply becomes completely an empirical question.

The second extension in this simple model which would allow for part-time earnings above the disregard in states with formulas such as that of Oregon is to introduce time more explicitly. A worker might take a part-time job with earnings above the disregard with the understanding that the job will turn into a full-time job, or at least will prepare him for potential full-time work. Similarly, for a worker who considers his job at least in part as an investment in experience, it may be optimal to work more hours than would be optimal if the experience had no value. In essence, the "true" wage is higher than it appears because the current money wage does not reflect the future productivity gains brought about by work experience. Thus the worker may work at a part-time job and have part-time earnings above the disregard in order to build up experience which could lead to future gains. Finally, the worker who has only a small amount left in his funds may choose to allocate the payments over a longer period than that for which he would be entitled to full payment by working part time above the disregard and having deductions taken from each check but getting checks over a longer period. In this case, the worker gets the same amount of income over the length of a spell of unemployment and works the same number of hours over the spell of unemployment. However, he has chosen to allocate his time of his unemployment in-surance payments so that he has the same amount of leisure in every period rather than taking a lot of leisure in the earlier portion of the spell of unemployment or incurring uncompensated unemployment. The effect of considerations like the effect of allowing for hours

constraints is to make the effect of different partial benefits formulas

on part-time labor supply ambiguous. The empirical issues are addressed

in the next section, using data from Oregon, Illinois, Pennsylvania,

and Nevada. The nature of the disregards in the three states which

employ this formula is such that we expect more part-time work in Pennsylvania

(disregard = .4 wba) than in Oregon (disregard = 1/3 wba), and for

both states to have noted above, it is impossible to make strong predictions

about the frequency of part-time work relative to states which use

a disregard and thus it is purely an empirical issue.

III. DATA AND ANALYSIS

In this section we describe the basic data made available by
the four states selected for this study—Illinois, Nevada, Oregon,
and Pennsylvania, and we discuss the limitations of the data for re-
solving policy issues. In the second part of this section we present
an empirical analysis of the individual's choice of whether to work
part time and therefore to receive partial benefits, and of whether
to continue to receive such benefits.

The data analyzed here are observations on a sample of indi-
viduals who received unemployment compensation payments in Nevada and
Oregon, 1973-1976; in Pennsylvania, 1973-1975; and in Illinois, 1975-
1977. Our ability to collect completely comparable data, both in terms
of time span covered and the types of information, was limited by the
data processing capabilities of the individual states, and thus we
were restricted in some of the comparisons. However, this did not
materially affect the conclusions reached.

The basic information series consists of a time series of
weekly benefit checks for each individual. From this time series we
can identify those individuals who received partial payments. Unfor-
tunately, it is not possible to separately identify the number of part-
time hours actually worked. Quarterly earnings totals are available
for each worker, but again these do not permit identification of hours,
or in most cases, weeks worked. Thus the variable which we focus upon
is the existence of a partial payment. Summary statistics for the
variables are contained in Tables 1 to 5. We have available 65,165

observations for the years 1973-76 for Illinois, Nevada, Oregon, and Pennsylvania. The composition of the sample by years is:

	1973	1974	1975	1976	Total
Illinois	--	--	564	2,016	2,580
Nevada	1,081	2,450	3,249	978	7,758
Oregon	205	1,158	2,352	1,986	5,701
Pennsylvania	8,941	20,036	16,725	844	46,702

The unit of observation in a given year is the individual, and the partial payment variable for that individual is equal to one if he ever received a partial payment during that year. Partial payments during the last week of the spell of unemployment are not counted however since this can occur due to a mid-week beginning of unemployment. As a check, the partial payments received in the last week of compensated unemployment were added to the partial payments variable. In Nevada during 1973 about 10 percent of the recipient population had partial payments during their spell of unemployment, about 6 percent more received a partial payment at the end of the spell. Similarly in Oregon and Pennsylvania the total number of partial payments plus endspells was about double the number of partial payments. The relative constancy of this ratio suggests that we could use either variable as a measure of partial benefit receipt; for consistency however we will maintain the definition of partial payments received in the last week as being due to the commencement of a new job and not per se a reflection of any of the parameters of the UI system.

Several interesting features of the data are revealed in Tables 1 to 5. Considering first the percent who received partial payments at anytime, the pattern across states and time indicates only a partial fulfillment of the predictions of the model discussed above.

TABLE 1

WORKER CHARACTERISTICS BY STATE, 1973

Characteristic	Nevada		Oregon		Pennsylvania	
	Mean	Standard Devidation	Mean	Standard Deviation	Mean	Standard Deviation
1. Received at least one partial payment	0.103	0.304	0.088	0.284	0.377	0.485
2. Received more than one partial payment	0.026	0.159	0.044	0.205	0.216	0.412
3. Agriculture, forestry, fishing	0.019	0.138	0.024	0.155	0.027	0.162
4. Mining	0.075	0.263	0.097	0.297	0.220	0.414
5. Construction	0.161	0.368	0.200	0.401	0.353	0.478
6. Manufacturing	0.292	0.455	0.127	0.333	0.196	0.397
7. Transportation, communication, utilities . . .	0.010	0.100	0.015	0.120	0.028	0.165
8. Wholesale trade	0.004	0.061	0.073	0.261	0.110	0.313
9. Retail trade	0.040	0.195	0.073	0.261	0.007	0.081
10. Finance, insurance, and real estate	0.008	0.091	0.029	0.169	0.042	0.200
11. Services (including agriculture	0.223	0.416	0.146	0.354	0.010	0.098
12. Public administration	0.167	0.373	0.180	0.385	0.008	0.089
13. Professional, technical, managerial	0.003	0.053	0.019	0.139	N.A.[a]	
14.	0.198	0.399	0.097	0.297		
15. Clerical and sales occupations	0.022	0.147	0.205	0.405		
16. Service occupations	0.037	0.188	0.073	0.261		
17. Farming, fishery, forestry occupations	0.038	0.191	0.034	0.182		
18. Processing occupations	0.166	0.372	0.268	0.444		
19. Machine trades occupations	0.042	0.200	0.034	0.182		
20. Benchwork occupations	0.437	0.496	0.068	0.253		
21. Structural work occupations	0.032	0.177	0.068	0.253		
22. Miscellaneous occupations	0.025	0.156	0.132	0.339		
23. Age	37.771	14.445	38.078	14.069	41.958	13.301
24. White	0.869	0.337	0.966	0.182	0.909	0.288
25. Black	0.098	0.297	0.010	0.098	0.088	0.284
26. Female	0.307	0.461	0.336	0.474	0.447	0.497
27. Male	0.693	0.461	0.663	0.474	0.553	0.497
28. Weekly benefit amount	62.44	20.65	50.58	18.46	68.32	20.49

Left-side bracket labels: Industrial Distribution of Compensated Unemployment (rows 3–12); Occupational Distribution of Compensated Unemployment (rows 13–22).

[a]NA = data not available.

TABLE 2

WORKER CHARACTERISTICS BY STATE, 1974

	Characteristic	Nevada		Oregon		Pennsylvania	
		Mean	Standard Devidation	Mean	Standard Deviation	Mean	Standard Deviation
	1. Received at least one partial payment	0.133	0.340	0.129	0.335	0.318	0.466
	2. Received more than one partial payment	0.033	0.180	0.036	0.187	0.172	0.377
	3. ⎫ Professional, technical, managerial occs. . .	0.023	0.151	0.026	0.159	0.009	0.092
	4. ⎭	0.073	0.260	0.047	0.213	0.166	0.092
Occupational Distribution of Compensated Unemployment	5. Clerical and sales occupations	0.185	0.389	0.159	0.366	0.304	0.469
	6. Service occupations	0.260	0.438	0.096	0.294	0.254	0.435
	7. Farming, fishery, forestry occupations	0.006	0.081	0.015	0.124	0.039	0.193
	8. Processing occupations	0.007	0.085	0.073	0.261	0.144	0.351
	9. Machine trades occupations	0.042	0.201	0.117	0.322	0.016	0.125
	10. Benchwork occupations	0.016	0.127	0.057	0.232	0.046	0.210
	11. Structural workoccupations	0.233	0.423	0.167	0.373	0.018	0.134
	12. Miscellaneous occupations	0.153.	0.360	0.216	0.412	0.004	0.063
	13. Agriculture, forestry, fishing	0.003	0.057	0.010	0.101	N.A.[a]	
	14. Mining	0.190	0.392	0.105	0.307		
Industrial Distribution of Compensated Unemployment	15. Construction	0.021	0.144	0.320	0.467		
	16. Manufacturing	0.035	0.185	0.078	0.268		
	17. Transportation, communication, utilities . . .	0.040	0.197	0.055	0.229		
	18. Wholesale trade	0.184	0.388	0.201	0.401		
	19. Retail trade	0.037	0.188	0.022	0.148		
	20. Finance, insurance, real estate	0.409	0.492	0.051	0.220		
	21. Services (including agriculture)	0.043	0.203	0.060	0.238		
	22. Public administration	0.037	0.188	0.096	0.294		
	23. Age	36.415	13.852	39.154	14.991	41.165	13.710
	24. White	0.865	0.342	0.975	0.156	0.909	0.287
	25. Black	0.094	0.292	0.009	0.093	0.087	0.282
	26. Female	0.317	0.465	0.242	0.428	0.401	0.490
	27. Male	0.682	0.466	0.758	0.428	0.599	0.490
	28. Weekly benefit amount	64.28	20.48	60.29	21.40	74.54	22.23

[a] NA = data not available

TABLE 3

WORKER CHARACTERISTICS BY STATE, 1975

	Characteristic	Nevada		Oregon		Pennsylvania		Illinois	
		Mean	Standard Devidation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Stand Deviat
	1. Received at least one partial payment	0.131	0.338	0.126	0.332	0.262	0.440	.129	..
	2. Received more than one partial payment	0.044	0.204	0.034	0.180	0.150	0.357	.025	
	3. } Professional, technical, managerial occs.	0.023	0.151	0.028	0.165	0.008	0.090	.007	.(
Occupational Distribution of Compensated Unemployment	4. }	0.081	0.272	0.040	0.196	0.153	0.360	.012	.
	5. Clerical and sales occupations	0.203	0.402	0.139	0.346	0.339	0.473	.051	.:
	6. Service occupations	0.270	0.444	0.084	0.277	0.275	0.446	.027	.
	7. Farming, fishery, forestry occupations	0.005	0.074	0.016	0.126	0.033	0.179	.005	.(
	8. Processing occupations	0.013	0.113	0.072	0.258	0.120	0.325	.011	.
	9. Machine trades occupations	0.033	0.178	0.126	0.332	0.013	0.115	.027	.
	10. Benchwork occupations	0.019	0.136	0.065	0.246	0.039	0.194	.034	.
	11. Structural work occupations	0.190	0.393	0.174	0.379	0.016	0.125	.042	.
	12. Miscellaneous occupations	0.162	0.368	0.198	0.399	0.003[a]	0.054	.058	.
	13. Agriculture, forestry, fishing	0.003	0.058	0.013	0.114	N.A.[a]		.112	.
	14. Mining	0.168	0.374	0.115	0.319			.034	.
Industrial Distribution of Compensated Unemployment	15. Construction	0.017	0.129	0.316	0.465			.071	.:
	16. Manufacturing	0.042	0.200	0.122	0.327			.105	.:
	17. Transportation, communication, utilities	0.043	0.203	0.048	0.215			.076	.
	18. Wholesale trade	0.196	0.397	0.170	0.375			.128	.
	19. Retail trade	0.038	0.192	0.024	0.154			.163	.:
	20. Finance, insurance, real estate	0.413	0.492	0.044	0.206			.136	
	21. Services (including agriculture)	0.045	0.205	0.056	0.229			.050	
	22. Public administration	0.035	0.185	0.092	0.289			.126	.:
	23. Age	36.478	13.930	40.986	19.198	41.694	13.594	34.675	13.(
	24. White	0.868	0.338	0.974	0.159	0.909	0.287	.741	.
	25. Black	0.096	0.294	0.011	0.105	0.087	0.282	.140	.:
	26. Female	0.339	0.474	0.274	0.446	0.430	0.495	.335	.
	27. Male	0.660	0.474	0.726	0.446	0.570	0.495	.663	.
	28. Weekly benefit amount	66.10	21.06	66.80	23.57	74.82	21.74	90.01	35.(

[a] NA = data not available.

TABLE 4

WORKER CHARACTERISTICS BY STATE, 1976

Characteristic	Nevada		Oregon		Pennsylvania		Illinois	
	Mean	Standard Devidation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Stand. Deviat
Occupational Distribution of Compensated Unemployment								
1. Received at least one partial payment	0.095	0.293	0.100	0.300	0.032	0.176	.090	
2. Received more than one partial payment	0.033	0.178	0.043	0.202	0.014	0.118	.032	
3. Professional, technical, managerial occs.	0.022	0.148	0.041	0.198	0.009	0.097	.013	
4.	0.091	0.288	0.056	0.231	0.135	0.342	.030	
5. Clerical and sales occupations	0.193	0.395	0.168	0.374	0.224	0.417	.066	
6. Service occupations	0.310	0.463	0.093	0.291	0.265	0.442	.032	
7. Farming, fishery, forestry occupations	0.009	0.095	0.022	0.147	0.033	0.179	.002	
8. Processing occupations	0.017	0.131	0.070	0.256	0.203	0.402	.011	
9. Machine trades occupations	0.030	0.170	0.098	0.298	0.035	0.185	.033	
10. Benchwork occupations	0.013	0.115	0.040	0.195	0.054	0.227	.033	
11. Structural work occupations	0.152	0.359	0.189	0.391	0.035	0.185	.034	
12. Miscellaneous occupations	0.161	0.368	0.179	0.383	0.005	0.069	.042	
Industrial Distribution of Compensated Unemployment								
13. Agriculture, forestry, fishing	0.004	0.064	0.023	0.150	N.A.[a]		.131	.
14. Mining	0.141	0.348	0.151	0.358			.041	.
15. Construction	0.018	0.134	0.216	0.412			.077	.
16. Manufacturing	0.036	0.186	0.102	0.303			.108	.
17. Transportation, communication, utilities	0.058	0.234	0.045	0.207			.077	.
18. Wholesale trade	0.200	0.400	0.200	0.400			.131	.
19. Retail trade	0.036	0.186	0.031	0.173			.147	.
20. Finance, insurance, real estate	0.428	0.495	0.050	0.219			.128	.
21. Services (including agriculture)	0.050	0.218	0.0082	0.274			.057	.
22. Public administration	0.028	0.164	0.100	0.300			.102	.
23. Age	37.513	14.019	37.110	14.874	42.380	15.225	37.202	14.
24. White	0.860	0.347	0.975	0.157	0.876	0.330	.742	.
25. Black	0.107	0.310	0.016	0.124	0.118	0.323	.106	.
26. Female	0.321	0.467	0.324	0.468	0.400	0.490	.386	.
27. Male	0.679	0.467	0.676	0.468	0.600	0.490	.614	.
28. Weekly benefit amount	68.75	20.71	69.32	26.05	73.51	22.52	94.41	32.

[a] NA - data not available.

TABLE 5

WORKER CHARACTERISTICS FOR ILLINOIS 1977

	Characteristic	Illinois	
		Mean	Standard Deviation
	1. Received at least one partial payment . .	.072	.259
	2. Received more than one partial payment .	.026	.159
Occupational Distribution of Compensated Unemployment	3. Professional, technical, managerial occs.	.013	.115
	4.	.030	.172
	5. Clerical and sales occupations	.075	.263
	6. Service occupations	.040	.196
	7. Farming, fishery, forestry occupations .	.002	.043
	8. Processing occupations	.011	.106
	9. Machine trades occupations	.032	.177
	10. Benchwork occupations	.027	.162
	11. Structural work occupations	.027	.162
	12. Miscellaneous occupations	.042	.201
Industrial Distribution of Compensated Unemployment	13. Agriculture, forestry, fishing	.154	.361
	14. Mining	.039	.195
	15. Construction	.092	.289
	16. Manufacturing	.118	.323
	17. Transportation, communication, utilities.	.073	.260
	18. Wholesale trade	.119	.324
	19. Retail trade	.127	.333
	20. Finance, insurance, real estate	.118	.323
	21. Services (including agriculture)	.067	.250
	22. Public administration	.091	.288
	23. Age	37.325	14.040
	24. White	.713	.452
	25. Black	.109	.311
	26. Female	.407	.491
	27. Male	.593	.491
	28. Weekly benefit amount	97.54	31.95

TABLE 6

PERCENT RECEIVING PARTIAL BENEFITS,
BY STATE AND YEAR

State	Year				
	1973	1974	1975	1976	1977
Illinois	ND	ND	12.9	9.0	7.2
Nevada	10.3	13.3	13.1	9.5	ND
Oregon	8.8	12.9	12.6	10.0	ND
Pennsylvania	37.7	31.8	26.2	3.2	ND

ND = no data for this year.

With the exception of 1976, Oregon consistently has a lower fraction of individuals receiving partial benefits. Pennsylvania, on the other hand, has a much higher percentage receiving partial benefits. Whether this is due to structural differences—e.g., Pennsylvania has more miners who are frequently working reduced days— or whether it belies a different method of paying benefits, such as different treatment of pension benefits for separated workers requires further investigation.

A revealing comparison of these figures can be made by observing the fraction of the beneficiary population who receive partial benefits more than once in a spell of unemployment.

TABLE 7

PERCENT RECEIVING MORE THAN ONE PARTIAL BENEFIT PAYMENTS,
BY STATE AND YEAR

State	Year				
	1973	1974	1975	1976	1977
Illinois	ND	ND	2.3	3.2	2.6
Nevada	2.6	3.3	4.2	3.3	ND
Oregon	4.4	3.6	3.4	4.3	ND
Pennsylvania	21.6	17.2	15.0	1.4	ND

ND = no data for this year.

These numbers range from 50 to 80 percent of the corresponding
numbers for the fraction that ever received partial payments. Thus
these crude comparisons indicate that the phenomena of steady part-
time work and receipt of unemployment benefits, or at least the re-
porting of such wages, is a very rare occurrence, except in Pennsylvania.

Crude comparison of means conceals as much as it reveals since
there are significant variations across states in the occupational
and industrial mix of employment. Pennsylvania, for example, has
a much greater concentration of mining, and wholesale trade, industries
which offer relatively greater opportunities for part-time work for
full-time employees during a slow-down in aggregate business activity.
Controlling for this aspect of the employment relationship is important
since the effects of differential benefit taxation on part-time work
are likely to be small relative to the effects of different job

characteristics.[1] To control for industry difference a series of dummy

variables were created for the industry of last attachment. Data on

occupational employment was available for some states--Nevada, Oregon--

but the absence of such data for the remaining states limited its use.

Finally, individual specific data on race, sex, and age are avail-

able to control for individual differences in preference for, or ability to,

perform part-time work.   Previous earnings and maximum benefit amount

are available also. Since they are so closely related for most workers

we use only maximum benefit amount in the analysis which follows.

An Empirical Model of the Part-Time Work Decision

In this section we seek answers to two questions: How sensitive

is the part-time work decision to the implicit tax parameters of the

UI system?   How sensitive is the part-time work decision to aggregate

demand conditions? We provide answers to both questions through the

use of the static short-run labor supply model discussed in Section II.

Unfortunately, limitations of data and limitations imposed by the types

of benefit systems in existence provide inflexible boundaries to the

empirical analysis, and preclude the answering of some very specific

---

[1]Note that this discussion implies a second way in which reduction
of UI benefits can effect the amount of part-time work chosen. In
the simple model of the previous section the effect was discussed in
terms of an unemployed worker opting for a part-time position until
a more desirable full-time opportunity occurred. This creates an
impression of two separate employers. However, where taxation of
benefits is more favorable it is likely that firms and workers will
negotiate contracts allowing for greater use of short working hours
that individuals will be required to work. It is difficult to separate
out these two phenomona with the data available to us, but conceptually
they are distinct.

questions concerning the effects of the UI system. Despite these

limitations the model is capable of explaining the direction and net

effects of different benefit schedules.

The model described in Section II can be written as:

$$h_i = h(W_i, Z_i, \Theta_j,) \text{ if } h > o \tag{1}$$

$$= 0 \text{ if } h (\ . \ ) \leq 0$$

where: h_i is the number of desired part-time hours of work by the i<u>th</u>

individual;

w_i is the hourly wage faced;

Z_i is a vector of demographic control variables; and

Θ_j is a vector of UI parameters for state$_j$, i.e., tax rate, disregard, etc.

If h_i and w_i were available it would be possible to estimate

(1) in an appropriate manner, say by Tobit, with the direct relationship

between the tax parameter, Θ, and budget constraint incorporated.

The power of this approach would be in the ability to incorporate the

UI parameters into the model in a theoretically consistent manner.

Unfortunately, as we have noted, information on h or w is not separately

available, and resort must be had to a less direct modeling.

Consider, then, equation (1) with a random component:

$$h_i = h (\ . \ ) + \varepsilon_i \tag{1'}$$

Although h_i is not observed the indicator variable d_i, which equals

1 if $h_i > o$, and equals 0 if $h_i = o$, is observed. Since the probability

that $d_i = 1$, $P (d_i = 1)$ equals $P(h_i(.) > - \varepsilon_i)$, it is clear that we can

estimate the effect of the determinants of h (.) on the likelihood

of working part time, but that we cannot measure the effect, conditional

on the individual working, of the UI parameters on the amount of part-time work. Thus at the outset the absence of wage and hour data precludes estimation of the quantitative effect of the UI system on hours of work.

Accepting this constraint, the model to be investigated is:

$$P(d_i = 1) = d(w_i, z_i; \theta_j) \tag{2}$$

where d (.) is the transform of h (.) induced by the stochastic structure of ϵ. Several plausible specifications exist for d--probit and logistic come naturally to mind--but in view of the large number of observations, we decided to restrict ourselves to the linear probability function. This produces consistent estimates of the coefficient vector, and with GLS provides consistent estimates of the variance terms also. Thus the model we examine is:

$$d_i = \beta_o + \beta_1 z_i + \beta_2 \theta_j + \epsilon_i \tag{3}$$

where β_2 represents the effect of state-specific UI parameters on the probability that an individual accepts part-time employment. The question which arises is under what conditions can β_2 be identified. Clearly, a cross section of individuals from one state, or a time series of observations on individuals in one state provides insufficient information because θ is constant for individuals. This is a problem which besets several studies of the effects of UI on duration of un-employment, e.g., Hoelen (1977), Classen (1977), since observed differences in a parameter--the replacement rate for example--must be due to individual specific circumstances and not per se to the UI system. A before-after comparison can be made from panel data for one state if there is a change in some of the θ's, but the time period covered in the study does not contain any such opportunities.

The most natural comparison to make is between identical individuals in states with different tax parameters. In this case we can write (3) as:

$$d_i = \beta_{oj} + \beta_j z_i + \epsilon_i \tag{4}$$

with $\beta_{oj} = \beta_o + \beta \Theta_{2\,j}$. Since Θ_j is constant across individuals within the state, the effects of different state parameters is observationally equivalent to the hypothesis that the regression function differs by a constant across states. Thus our test for the effect of different UI parameters amounts to a question of pooling: Can one reject the hypothesis that the part-time work decision is identical across states? To examine this question, equation (4) was estimated on the pooled sample of data for Nevada, Oregon, and Pennsylvania for 1973-74, and on all four states for 1975 and for Illinois, Nevada, and Oregon for 1976. In all the regressions the constant term is constrained to be the same for all states. The regressions are repeated with the intercept allowed to vary by state. The constrained results are presented in Tables 8 to 11, and the unconstrained regressions are in Tables 12 to 15.

The method of estimation is ordinary least squares (OLS). The coefficient estimates obtained are consistent, although the variances are not due to heteroskedasticity in the residuals. In future work it may be possible to eliminate this problem by using generalized least squares (GLS). In any event we do not regard the problem as serious, given the number of observations involved, and discuss the results as though the standard errors were exact.

TABLE 8

REGRESSION ANALYSIS OF NEVADA, OREGON, AND PENNSYLVANIA DATA, 1973

Variable	Coefficient	Standard error
Dependent:	Partial payments > 0	
Independent:		
Constant	-0.059	.069
Agriculture, Forestry, Fishing	0.004	.031
Mining	0.068	0.017
Construction	0.210	0.016
Manufacturing	0.039	0.017
Wholesale trade	0.143	0.029
Retail trade	-0.118	0.044
Finance, Insurance	-0.034	0.020
Services (including agriculture)	-0.048	0.041
Public Administration . .	-0.035	0.042
Age	0.004	0.002
Age^2	-0.143	0.243
White	0.084	0.056
Black	0.014	0.057
Female	0.178	0.013
Benefit amount (x10-4) . .	0.029	0.027
Coefficient of determination	0.118	
Standard error of regression	0.448	
F Value	91.3	
Number of observations . .	10,227	

TABLE 9

REGRESSION ANALYSIS OF NEVADA, OREGON, AND
PENNSYLVANIA DATA, 1974

Variable	Coefficient	Standard error
Dependent:	Partial payments > 0	
Independent:		
Constant	-0.071	0.040
Agriculture, Forestry, Fishing	-0.008	0.032
Mining	0.086	0.011
Construction	0.215	0.009
Manufacturing	0.053	0.010
Wholesale trade	0.132	0.016
Retail trade	-0.114	0.022
Finance, Insurance	-0.004	0.012
Services (including agriculture)	-0.061	0.020
Public Administration . .	-0.031	0.027
Age	0.010	0.001
Age^2 $(x10^{-4})$	-0.939	0.142
White	0.048	0.032
Black	-0.028	0.033
Female	0.147	0.007
Benefit amount $(x10^{-4})$ . .	-0.051	0.016
Coefficient of determination	0.097	
Standard error of regression	0.431	
F Value	168.986	
Number of observations . .	23,644	

TABLE 10

REGRESSION ANALYSIS OF NEVADA, OREGON, ILLINOIS AND PENNSYLVANIA DATA, 1975

Variable	Coefficient	Standard error
Dependent:	Partial payments >0	
Independent:		
Constant	-0.067	.031
Agriculture, Forestry, Fishing	-0.052	.027
Mining	0.014	.010
Construction	0.184	.009
Manufacturing	0.006	.009
Wholesale trade	0.121	.015
Retail trade	-0.078	.019
Finance, Insurance	-0.007	.011
Services (including agriculture)	-0.038	.018
Public Administration . .	-0.014	.020
Age	0.005	0.001
Age^2 . $(x10^{-4})$	-0.530	0.091
White	0.016	.024
Black	-0.040	.026
Female	0.112	0.007
Benefit amount $(x10^{-4})$ . .	-0.003	0.014
Coefficient of determination	.082	
Standard error of regression	.401	
F Value	136.326	
Number of observations . .	22,890	

TABLE 11

REGRESSION ANALYSIS OF NEVADA, OREGON, ILLINOIS AND PENNSYLVANIA DATA, 1976

Variable	Coefficient	Standard error
Dependent:	Partial payments >0	
Independent:		
Constant	0.036	.033
Agriculture, Forestry, Fishing	0.027	.019
Mining	0.018	.016
Construction	0.027	.016
Manufacturing	-0.003	.017
Wholesale trade	0.058	.020
Retail trade	0.030	.018
Finance, Insurance	0.027	.015
Services (including agriculture)	0.049	.019
Public Administration . .	0.042	.017
Age	-0.003	.001
Age^2 . $(x10^{-4})$	0.134	.146
White	0.030	.016
Black	-0.020	.022
Female	0.023	.009
Benefit amount $(x10^{-4})$ . .	-0.008	.015
Coefficient of determination		.010
Standard error of regression		.292
F Value		3.290
Number of observations . .		4,980

TABLE 12

REGRESSION ANALYSIS OF NEVADA, OREGON, AND
PENNSYLVANIA DATA, 1973

Variable	Coefficient	Standard error
Dependent:	Partial payments >0	
Independent:		
Nevada	− .094	.068
Oregon	−0.139	.008
Pennsylvania	0.955	.069
Agriculture, Forestry, Fishing	−0.037	.031
Mining	0.058	.017
Construction	0.182	.016
Manufacturing	0.114	.017
Wholesale trade	0.139	.029
Retail trade	−0.063	.044
Finance, Insurance	0.035	.021
Services (including agriculture)	−0.012	.040
Public Administration . .	0.015	.042
Age	0.004	.002
Age^2 . $(x10^{-4})$	−0.170	0.241
White	0.007	.055
Black	−0.069	.057
Female	0.164	.013
Benefit amount $(x10^{-4})$ . .	−0.018	.027
Coefficient of determination	.133	
Standard error of regression	.442	
F Value	9.178	
Number of observations . .	10,227	

TABLE 13

REGRESSION ANALYSIS OF NEVADA, OREGON, AND
PENNSYLVANIA DATA, 1974

Variable	Coefficient	Standard error
Dependent:	Partial payments >0	
Independent:		
Nevada	−0.072	.040
Oregon	−0.131	.041
Pennsylvania	0.049	.040
Agriculture, Forestry, Fishing	−0.016	.032
Mining	0.084	.010
Construction	0.206	.009
Manufacturing	0.038	.010
Wholesale trade	0.133	.016
Retail trade	−0.103	.022
Finance, Insurance	0.033	.013
Services (including agriculture)	−0.037	.020
Public Administration . .	0.048	.027
Age	0.009	.001
Age^2 . $(\times 10^{-4})$	−0.943	.141
White	0.004	.032
Black	−0.082	.033
Female	0.126	.007
Benefit amount $(\times 10^{-4})$ . .	−0.1061	0.016
Coefficient of determination	.107	
Standard error of regression	.429	
F Value	166.847	
Number of observations . .	23,644	

TABLE 14

REGRESSION ANALYSIS OF NEVADA, OREGON, ILLINOIS AND
PENNSYLVANIA DATA, 1975

Variable	Coefficient	Standard error
Dependent:	Partial payments > 0	
Independent:		
Illinois	0.049	.031
Nevada	0.038	.032
Oregon	−0.014	.032
Pennsylvania	0.109	.035
Agriculture, Forestry, Fishing	−0.052	.027
Mining	−0.005	.010
Construction	0.173	.009
Manufacturing	−0.013	.009
Wholesale trade	−0.122	.016
Retail trade	−0.064	.020
Finance, Insurance	0.013	.012
Services (including agriculture)	−0.018	.018
Public Administration . .	.039	.021
Age	.004	0.001
Age^2 . $(x10^{-4})$	−0.331	0.092
White	−0.008	.024
Black	−0.007	.026
Female	0.097	.007
Benefit amount $(x10^{-4})$ . .	−0.030	0.015
Coefficient of determination	.090	
Standard error of regression	.399	
F Value	126.022	
Number of observations . .	22,890	

TABLE 15

REGRESSION ANALYSIS OF NEVADA, OREGON, ILLINOIS AND PENNSYLVANIA DATA, 1976

Variable	Coefficient	Standard error
Dependent:	Partial payments >0	
Independent:		
Illinois	.032	.034
Nevada	.037	.034
Oregon	0.037	.034
Agriculture, Forestry, Fishing	.030	.020
Mining	.017	.016
Construction	.027	.016
Manufacturing	-0.023	.017
Wholesale trade	0.059	.020
Retail trade	0.031	.018
Finance, Insurance	0.027	.015
Services (including agriculture)	0.049	.019
Public Administration . .	0.043	.017
Age	-0.004	.001
Age^2 . $(x10^{-4})$	0.1385	.147
White	0.028	.017
Black	-0.021	.022
Female	0.024	.009
Benefit amount $(x10^{-4})$ . .	-0.004	.017
Coefficient of determination	.099	
Standard error of regression	.293	
F Value	4.646	
Number of observations . .	4,980	

Before examining the specific hypotheses of the effect of the
UI system, several features of the regressions merit comment. First,
there is wide variation by industry of the acceptance of part-time
work. The construction industry in particular seems to provide relatively
large amounts. For example, in 1973, a construction worker was five
times as likely to accept part-time work as an individual who was formerly
employed in manufacturing (.210/.039). Wholesale trade also provided
greater work opportunities--individuals laid off from jobs in wholesale
trade were four times more likely to find part-time employment than
manufacturing workers (.143/.039). In general, observation of the
industry coefficients in Tables 11 to 13 indicates a systematic pattern
across time in the likelihood of an individual in a given industry
accepting part-time employment while receiving UI benefits. This persistency
merits future research attention because we cannot separate out where
workers in these industries obtain part-time work. If the part-time
work is with the previous employer--in other words the layoff which
resulted in a UI claim was really a reduced work week--then part of
the "true" effect of the UI system on economic activity may be masked
by industry dummy variables. This would suggest a detailed study of
the difference in negotiated layoff procedures and how they are af-
fected by the UI differences across states. Alternatively, if the
industry variables proxy differences in individual's budget constraints
which are not otherwise controlled for in the regression, the short-
run labor supply model is the correct interpretation of the effects.
In the absence of information about the part-time employer we cannot
distinguish between these alternatives.

The effects of personal characteristics appear relatively small in determining the likelihood of part-time work. There are no appreciable differences by race in the 1973 and 1976 data, although the intervening years indicate a slight but significant tendency for blacks to work part-time less frequently.

Sex differences in participation appear strongly in these results with women being consistently more likely to work part time than males. This seems more consistent with a short-run labor supply interpretation since relatively few women are covered by collective bargaining agreements and hence are less likely to be affected by long-term agreements predicated on the implicit tax structure of the UI system. Indeed, given the relatively high marginal tax rates which most married women face, the expectation would be for women to be less likely to work part time. That women are more likely to work part time and report their earnings than males in spite of the tax obstacle suggests that part-time employment may be desirable from household considerations. Age also has an effect on the probability of part-time employment, and the age-squared term indicates that the effect is highly nonlinear. The weekly benefit amount has a consistently negative effect on the probability of working part time (leading to a check reduction).

We turn now to the central hypothesis--are there systematic differences across states in the constant terms of the regression? To test this hypothesis we consider the difference between the error sum of squares in the unconstrained regressions--where the constant is assumed identical across the states--and the error sum of squares

when the constant varies across states. The statistic:

$$\frac{\Delta ESS^2 / K_1}{ESS^x / T - K, -K_2}$$

(5)

is distributed as $F(K_1, T-K_1-K_2)$. Where K_1 is the number of variables excluded in the constraint regression. The calculated F statistics are tabulated in Table 16.

TABLE 16

F-TESTS OF THE HYPOTHESIS

$H_o : \beta_{oj} = \beta_o$, BY YEAR

Year	States	Constrained	Unconstrained	N	F
1973	Nevada, Oregon, Pennsylvania	$2.0292 \times 10^{+3}$	1.99615×10^3	10,227	84.51
1974	Nevada, Oregon, Pennsylvania	4.39369×10^3	4.34357×10^3	23,644	136.31
1975	Illinois, Nevada Oregon, Pennsylvania	3.6819×10^3	3.64912×10^3	22,890	68.48
1976	Illinois, Nevada, Oregon	4.24661×10^2	4.24636×10^2	4,980	0.97

Compared to the critical value of the F-statistic of 3.32, all regressions except 1976 indicate that there are significant differences among the states in the likelihood of receiving partial benefits.

Accepting then that these are differences across states, the question of interest is: Are these differences consistent with the labor supply prediction of the previous Section? The estimated constants are displayed in Table 17.

TABLE 17

UNCONSTRAINED REGRESSION CONSTANTS:
BY STATE AND YEAR

State	Year			
	1973	1974	1975	1976
Nevada	-0.0942	-0.0720	.0376	.0368
Oregon	-0.1398	-0.1315	-.0144	.0374
Pennsylvania	0.0954	0.0485	.1094	--
Illinois	--	--	.0497	.0315

The results are somewhat mixed but generally in accord with
our a priori expectations. Among the states which use a disregard,
we would expect Pennsylvania to have the greatest part-time work and
Illinois to have the least. As Table 17 indicates, other things equal,
the probability of an individual working part time is greater in Pennsylvania
than in Oregon or Illinois in 1973, 1974, and 1975. We have only two
years data on Illinois, and part-time work is more likely in Oregon
than in Illinois in one of the two years. Thus, of the five possible
comparisons that could be made, four of them (80 percent) occur as
one would expect. This supports the hypothesis that higher disregards
lead to greater part-time work.

With regard to comparing the effects of a constant tax used
in Nevada with the disregard used in the other states, no firm conclusions
can be made. Part-time work is more prevalent in Nevada than in Oregon
in three of four years, equally likely in Illinois, and always less
prevalent in Pennsylvania. On the average, part-time work in Nevada
seems to place it in the middle of the three states which use a disregard.

This indicates that there is nothing special about one benefit formula or the other; what is important is the values of the parameters used by the states--that is, the level of the disregard and the rate of benefit reduction.

The Effects of Aggregate Demand Conditions on Receipt of Partial Benefits

In the previous section the effects of different benefit payment systems on the supply of part-time labor were investigated for each year separately. Underlying this stratification was the belief that, in addition to differences across states, it is likely that part-time work would be sensitive to aggregate demand conditions. For example, a responsiveness to aggregate demand conditions could be induced either by a decline in the return to search for full-time employment, or a change in the availability of part-time jobs over the business cycle. The existence of such an effect is of course an empirical question which deserves attention. If there are such differences, then part or all of the effects attributed to the UI system may be reflections of demand conditions varying within states. There are two possible means of investigating this issue. One would be to include a measure of demand in the regressions and make inferences based on the magnitude of the coefficients. In principle such an approach is feasible, but in practice it is difficult to develop measures of demand conditions. Local unemployment rates, say by SMSA or by state, show a persistent difference over time which indicates that they are picking up a structural difference across regions. Thus a 3 percent unemployment rate in Chicago may imply the same level of aggregate demand as a 4.5 percent rate in Altoona, Pennsylvania. The assumption of equal effects per unit of a variable such as unemployment does not appear tenable.

An alternative approach is to regard the fluctuations in demand over the period 1973-77 as a "natural" experiment <u>within</u> each state, and test for differences across years. This is the approach that we have adopted in this study. In Tables 18 to 22 we present the results of pooling the regression within each state across time. To limit the proliferation of regression tables we report only the summary statistics for the unconstrained regressions in Table 22. For the state of Nevada data were   available on the occupations of individuals and were used in the within state regressions.

The F-statistics appropriate to the test of no effects of aggregate demand on part-time work are presented in Table 23. The critical F-value with four degrees of freedom in the numerator and infinite degrees of freedom in the denominator is 3.32 at the .01 confidence level. Therefore we reject for all four states the hypothesis that aggregate demand conditions do not affect the probability that an individual will accept part-time employment.

The pattern of effects over time is revealed in Table 24. Since 1973 and 1976 were high points of aggregate economic activity during the period under study one would expect to find the parameter changing in a N-shape over time, or if decreased demand leads to an increase in the fraction of workers accepting part-time work, the parameters should follow an inverted U-shape. The results in Table 24 support the hypotheses that the acceptance of part-time work increases in a recession for Nevada and Oregon, but that it decreases in Pennsylvania. (With only two years of data for Illinois it is difficult to make any statement.) It is not immediately obvious why there should be a difference

TABLE 18

REGRESSION ANALYSIS OF NEVADA DATA
POOLED ACROSS YEARS 1972 - 1976

Variable	Coefficient	Standard error
Dependent:	Partial payments > 0	
Independent:		
Constant	0.328	0.044
Professional, technical . . . .{	-0.017	0.041
	-0.035	0.036
Clerical occupations	-0.050	0.035
Service occupations	-0.039	0.035
Processing occupations	-0.039	0.054
Machine trades occupations	-0.032	0.038
Benchwork trades occupations	-0.081	0.042
Structural work occupations	-0.061	0.035
Miscellaneous	-0.037	0.035
Agriculture, Forestry, Fishing	0.023	0.060
Mining	0.023	0.013
Construction	0.045	0.026
Manufacturing	0.029	0.020
Wholesale trade	0.086	0.018
Retail trade	0.012	0.019
Finance, insurance	0.034	0.010
Services	0.040	0.019
Public administration	0.009	0.021
Age	0.002	0.001
Age^2 . $(x10^{-4})$	-0.223	0.129
White	0.012	0.018
Black	-0.034	0.021
Female	-0.032	0.009
Benefit amount $(x10^{-4})$	-0.3431	0.018
R^2	0.057	
Standard error of regression	0.317	
F-Value	21.782	
Number of observations	8,745	

TABLE 19

REGRESSION ANALYSIS OF OREGON DATA
POOLED ACROSS YEARS 1973 - 1977

Variable	Coefficient	Standard error
Dependent:	Partial payments > 0	
Independent:		
Constant	0.084	0.041
Professional, technical . . . . $\left\{\begin{array}{}\end{array}\right.$	0.017	0.025
	-0.057	0.021
Clerical occupations	-0.039	0.016
Service occupations	-0.021	0.018
Processing occupations	-0.046	0.030
Machine trades occupations	-0.024	0.017
Benchwork trades occupations	-0.007	0.020
Structural work occupations	-0.043	0.016
Miscellaneous	-0.029	0.015
Agriculture, Forestry, Fishing	0.000	0.032
Mining	-0.003	0.015
Construction	0.016	0.012
Manufacturing	-0.034	0.015
Wholesale trade	0.091	0.019
Retail trade	-0.033	0.024
Finance, insurance	0.004	0.019
Services	0.008	0.018
Public administration	0.006	0.015
Age	0.003	0.001
Age^2 . $(x10^{-4})$	-0.15	0.091
White	-0.051	0.033
Black	-0.083	0.046
Female	0.029	0.011
Weekly benefit amount $(x10^{-4})$	0.003	0.017
R^2	0.016	
Standard error of regression	0.308	
F-Value	4.716	
Number of observations	6,785	

TABLE 20

REGRESSION ANALYSIS OF PENNSYLVANIA DATA
POOLED ACROSS YEARS 1972 - 1976

Variable	Coefficient	Standard error
Dependent:	Partial payments > 0	
Independent:		
Constant	-0.076	0.037
Agriculture, Forestry, Fishing	-0.017	0.014
Mining	0.059	0.007
Construction	0.187	0.006
Manufacturing	0.005	0.007
Wholesale trade	0.136	0.011
Retail trade	-0.131	0.017
Finance, insurance	0.020	0.010
Services (including Agriculture) . . .	-0.043	0.016
Public administration	0.013	0.031
Age	0.009	0.001
Age^2 . $(x10^{-4})$	-0.817	0.111
White	0.029	0.032
Black	-0.051	0.033
Female	0.156	0.005
Weekly benefit amount $(x10^{-4})$.	0.012	0.011
Coefficient of determination	0.098	
Standard error of regression	0.435	
F-Value	405.708	
Number of observations	56,016	

TABLE 21

REGRESSION ANALYSIS OF ILLINOIS DATA
POOLED ACROSS YEARS 1975 - 1976

Variable	Coefficient	Standard error
Dependent:	Partial payments > 0	
Independent:		
Constant	- .029	.031
Professional, technical . . . . {	- .039	.033
	.000	.022
Clerical occupations	- .036	.015
Service occupations	.035	.020
Processing occupations	.078	.074
Machine trades occupations	.009	.021
Benchwork trades occupations	.006	.022
Structural work occupations	- .012	.021
Miscellaneous	.080	.018
Agriculture, Forestry, Fishing	.019	.015
Mining	.013	.016
Construction	.040	.015
Manufacturing	.020	.017
Wholesale trade	.034	.014
Retail trade	- .004	.015
Finance, insurance	- .011	.018
Services	.052	.016
Public administration	.002	.001
Age	.000	.000
Age^2 . $(x10^{-4})$	.039	.010
White	- .023	.014
Black	.021	.009
Female	0.016	0.004
Weekly benefit amount $(x10^{-4})$	0.1416	.071
R^2	.019	
Standard error of regression	.276	
F-Value	4.734	
Number of observations	5,770	

TABLE 22

SUMMARY STATISTICS FOR THE UNCONSTRAINED REGRESSION MODEL, BY STATE

State	R^2	N	Number of variables
Nevada	.061	8,745	29
Oregon	.021	6,785	29
Pennsylvania . . .	.109	56,016	20
Illinois	.018	5,770	29

TABLE 23

F-TESTS OF THE HYPOTHESIS

$H_o : \beta_{ot} = \beta_o$; BY STATE

State	R^2 Constrained	R^2 Unconstrained	N	F
Nevada	.057	.061	8,745	9.31
Oregon	.016	.021	6,785	8.66
Pennsylvania	.098	.109	56,016	172.88
Illinois	.019	.023	5,770	11.81

TABLE 24

UNCONSTRAINED REGRESSION COEFFICIENTS FROM POOLED REGRESSIONS WITHIN STATES

State	Year			
	1973	1974	1975	1976
Nevada	.298	.338	.343	.314
Oregon	.063	.098	.094	.071
Pennsylvania	-.002	-.041	-.108	-.302
Illinois	--	--	-.031	-.049

in behavior between Pennsylvania and the other states, but the data

clearly indicate such a difference. It is interesting to note however

that the differences across states which were examined previously stand

out even more clearly when one estimates the labor supply response within

a state over time.

Our conclusion is that aggregate demand conditions do have

a significant effect on part-time work--primarily, it appears, through

reducing the opportunity for such work.

Multiple Partial Benefit Receipts

The preceding analysis has dealt with the question of whether

part-time work was _ever_ undertaken in a given spell of unemployment.

Defining the question in this manner obscures some issues which are

relevant for public policy. For example, if part-time work becomes

available to an individual randomly each week--say by a lottery--the

effects of the UI system are likely to be quite different than if a

commitment to part-time work has to be made for the entire duration

of unemployment. In the former case one might imagine that an individual

might accept some part-time work to cover temporary case needs and

yet be reluctant to accept a more "permanent" commitment. Moreover,

if we relax the assumption that individuals are fully aware of the

implicit UI tax on part-time earnings, it is likely that some individuals

might take a part-time job but leave it when they learn of the true

tax structure.[1] Since the fraction of workers receiving more than

---

[1] Actually "leaving" a job is not the only option available
to part-time workers. Given the caseloads which most state employment
offices face it should not take an individual long to calculate the
gains (and losses) from not reporting earnings. The extent of this
phenomena should vary by state depending upon the resources put into
enforcement and the supply of jobs outside the covered sector.

one partial payment is roughly 50 percent of that receiving at least

one, it is clear that the scale of labor supply effects in the latter

case is likely to be much less.

To examine this issue we have estimated the model of equation (4)

with the dependent variable defined as 1 if an individual receives

more than one partial payment check in a given spell of unemployment

and zero otherwise. Since the issues and therefore the hypotheses are

the same as before, we present a similar series of tables. Tables 26

to 28 contain the results for the constrained regressions, Tables 29

to 32 contain the unconstrained results, and Table 34[1] contains the

F-tests appropriate to the hypotheses that there are no differences

across states due to the UI parameter in the probability of individuals

working part time for more than one week.

The regressions are generally quite comparable to those previously

presented. The industry variables again indicate significant differences,

although the contribution of some industries is significantly altered.

Construction workers still account for a large share of the part-time

work, while wholesale trade no longer appears to have a significant

effect. Individual characteristics play much the same role as before.

In particular, race differences are slight, and females engage in part-

time work significantly more than males. The effect of maximum benefit

entitlement is significant as before which reinforces the earlier conclusion

that this aspect of the UI system has a pronounced effect on the part-time

work decision.

Turning to the hypothesis of interest, whether there are systematic

differences in the constant term across states, the results in Table 34

indicate that significant differences across states persist even

---

[1]Table 33 deleted.

TABLE 25

REGRESSION ANALYSIS OF NEVADA, OREGON, AND PENNSYLVANIA DATA, 1973

Variable	Coefficient	Standard error
Dependent:	Partial payments > 1	
Independent:		
Constant	-0.108	0.056
Agriculture, Forestry, Fishing	-0.034	0.026
Mining	-0.029	0.014
Construction	0.160	0.013
Manufacturing	0.016	0.014
Wholesale trade	0.027	0.024
Retail trade	0.106	0.036
Finance, Insurance	0.042	0.017
Services (including agriculture)	0.037	0.033
Public Administration . .	0.048	0.035
Age	0.002	0.002
Age^2 . $(x10^{-4})$	0.009	0.000
White	0.054	0.046
Black	0.022	0.047
Female	0.153	0.009
Weekly benefit amt $(x10^{-4})$	0.071	0.000
Coefficient of determination	0.135	
Standard error of regression	0.367	
F Value	106.526	
Number of observations . .	10,227	

TABLE 26

REGRESSION ANALYSIS OF NEVADA, OREGON, AND PENNSYLVANIA DATA, 1974

Variable	Coefficient	Standard error
Dependent:	Partial payments > 1	
Independent:		
Constant	-0.082	0.031
Agriculture, Forestry, Fishing	0.017	0.025
Mining	0.022	0.008
Construction	0.171	0.007
Manufacturing	0.004	0.007
Wholesale trade	0.080	0.012
Retail trade	-0.085	0.017
Finance, Insurance	-0.018	0.009
Services (including agriculture)	-0.034	0.015
Public Administration . .	-0.018	0.021
Age	0.005	0.001
Age^2 . $(x10^{-4})$	-0.387	0.110
White	0.029	0.025
Black	-0.010	0.026
Female	0.127	0.006
Weekly benefit amt $(x10^{-4})$	-0.036	0.012
Coefficient of determination	0.122	
Standard error of regression	0.335	
F Value	219.503	
Number of observations . .	23,644	

TABLE 27

REGRESSION ANALYSIS OF NEVADA, OREGON, AND ILLINOIS DATA, 1975

Variable	Coefficient	Standard error
Dependent:	Partial payments >1	
Independent:		
Constant	-0.114	.024
Agriculture, Forestry, Fishing	-0.028	.021
Mining	-0.005	.008
Construction	0.138	.007
Manufacturing	-0.009	.007
Wholesale trade	0.066	.012
Retail trade	-0.053	.015
Finance, Insurance	-0.010	
Services (including agriculture)	-0.026	.014
Public Administration . .	-0.016	.016
Age	.004	0.000
Age^2 . $(x10^{-4})$	-0.399	0.000
White	0.034	.019
Black	-0.007	.020
Female	0.092	.005
Weekly benefit amt $(x10^{-4})$	0.038	0.000
Coefficient of determination	.082	
Standard error of regression	.311	
F Value	136.414	
Number of observations . .	22,890	

TABLE 28

REGRESSION ANALYSIS OF NEVADA, OREGON AND
ILLINOIS DATA, 1976

Variable	Coefficient	Standard error
Dependent:	Partial payments > 1	
Independent:		
Constant	.026	.021
Agriculture, Forestry, Fishing	.000	.012
Mining	.002	.010
Construction	.002	.010
Manufacturing	.010	.011
Wholesale trade	.037	.126
Retail trade	.006	.115
Finance, Insurance	.007	.009
Services (including agriculture)	.030	.012
Public Administration . .	.022	.011
Age	-.001	.001
Age^2 . $(x10^{-4})$	.210	.094
White	.019	.010
Black	.001	.014
Female	.001	.006
Weekly benefit amt $(x10^{-4})$	-0.000	.010
Coefficient of determination	.009	
Standard error of regression	.187	
F Value	3.240	
Number of observations . .	4,980	

TABLE 29

REGRESSION ANALYSIS OF NEVADA, OREGON, AND PENNSYLVANIA DATA, 1973

(Unconstrained)

Variable	Coefficient	Standard error
Dependent:	Partial payments > 1	
Independent:		
Nevada	-0.132	.057
Oregon	-0.142	.061
Pennsylvania	-0.018	.057
Agriculture, Forestry, Fishing	-0.053	.026
Mining	-0.020	.014
Construction	0.140	.013
Manufacturing	-0.031	.014
Wholesale trade	+0.024	.024
Retail trade	-0.074	.036
Finance, Insurance	0.000	.017
Services (including agriculture)	-0.016	.033
Public Administration . .	-0.021	.035
Age	0.002	.002
Age^2 . (x10^{-4})	-0.033	.199
White	0.009	.046
Black	-0.026	.047
Female	0.145	.010
Weekly benefit amt (x10^{-4})	0.044	.023
Coefficient of determination	.142	
Standard error of regression	.366	
F Value	99.	
Number of observations . .	10,227	

TABLE 30

REGRESSION ANALYSIS OF NEVADA, OREGON, AND PENNSYLVANIA DATA, 1974

(Unconstrained)

Variable	Coefficient	Standard error
Dependent:	Partial payments > 1	
Independent:		
Nevada	0.081	.031
Oregon	−0.129	.032
Pennsylvania	0.538	.031
Agriculture, Forestry, Fishing	0.005	.025
Mining	0.021	.008
Construction	0.164	.007
Manufacturing	−0.015	.007
Wholesale trade	0.081	.012
Retail trade	−0.077	.017
Finance, Insurance	0.008	.010
Services (including agriculture)	−0.017	.015
Public Administration . .	0.041	.021
Age	0.005	.001
Age^2 . $(x10^{-4})$	−0.391	.110
White	−0.002	.025
Black	−0.049	.026
Female	0.113	.005
Weekly benefit amt $(x10^{-4})$	−0.076	.013
Coefficient of determination	.131	
Standard error of regression	.333	
F Value	210.004	
Number of observations . .	23,644	

TABLE 31

REGRESSION ANALYSIS OF NEVADA, OREGON, ILLINOIS AND
PENNSYLVANIA DATA, 1975

(Unconstrained)

Variable	Coefficient	Standard error
Dependent:	Partial payments > 1	
Independent:		
Illinois	-0.0914	.024
Nevada	-0.072	.024
Oregon	-0.113	.025
Pennsylvania	-0.087	.027
Agriculture, Forestry, Fishing	-0.021	.021
Mining	-0.013	.008
Construction	0.127	.007
Manufacturing	-0.026	.007
Wholesale trade	0.066	.012
Retail trade	-0.036	.015
Finance, Insurance	0.017	.009
Services (including agriculture)	- .008	.014
Public Administration . .	0.033	.016
Age	0.003	.001
$Age^2 . (x10^{-4})$	-0.225	.071
White	.007	.019
Black	- .027	.020
Female	0.080	.005
Weekly benefit amt $(x10^{-4})$	0.018	
Coefficient of determination	.092	
Standard error of regression	.309	
F Value	129.456	
Number of observations . .	22,890	

TABLE 32

REGRESSION ANALYSIS OF NEVADA, OREGON AND ILLINOIS DATA, 1976

(Unconstrained)

Variable	Coefficient	Standard error
Dependent:	Partial payments > 1	
Independent:		
Illinois	.022	.022
Nevada	.021	.022
Oregon	.030	.022
Agriculture, Forestry, Fishing	.002	.013
Mining	.001	.011
Construction	.001	.010
Manufacturing	.010	.011
Wholesale trade	.038	.013
Retail trade	.008	.012
Finance, Insurance	.009	.010
Services (including agriculture)	.029	.012
Public Administration . .	.022	.011
Age	− .001	.001
Age^2 . $(x10^{-4})$	.211	.094
White	.017	.011
Black	.001	.014
Female	.012	.006
Weekly benefit amt $(x10^{-4})$	−0.062	.011
Coefficient of determination	.098	
Standard error of regression	.187	
F Value	3.285	
Number of observations . .	4,980	

in this narrower definition of part-time work. Compared with the

critical F-value of 3.32, all comparisons except for 1976 lead to a

rejection of the hypothesis that there are no differences across states

in the likelihood of receiving more than one week of partial benefits.

Pennsylvania, on balance, seems to have the greatest probability of

providing partial benefits. This is consistent with our finding in

the previous section. Participation in part-time work is about equally

likely in Oregon and Illinois, and again, Nevada seems to lie in the

middle of the distribution. Thus, even with this narrower definition

of part-time labor supply, the conclusions drawn above about the effects

of the UI benefit formulas still stand.

TABLE 34

F-TESTS OF THE HYPOTHESIS

$$H_{oi}\beta_{oj} = \beta_{oj} \quad 1 \text{ BY YEAR}$$

Year	States	Constrained	Unconstrained	N	F
1973	Nevada, Oregon, Pennsylvania	1.37531×10^3	1.36426×10^3	10,227	41.3
1974	Nevada, Oregon, Pennsylvania	2.65781×10^3	2.63066×10^3	23,644	121.92
1975	Illinois, Nevada Oregon, Pennsylvania	2.21187×10^3	2.18692×10^3	22,890	86.98
1976	Illinois, Nevada, Oregon	1.7369×10^2	1.73633×10^2	4,980	0.82

TABLE 35

UNCONSTRAINED REGRESSION COEFFICIENTS FROM POOLED
CROSS-STATE REGRESSION, BY YEAR

State	Year			
	1973	1974	1975	1976
Nevada	-.1316	-.0811	-.0719	.0214
Oregon	-.1415	-.1295	-.1133	.0300
Pennsylvania	-.0184	-.0054	-.0087	--
Illinois	--	--	-.0914	.0233

The effect of aggregate demand on part-time employment greater
than one week can be tested in the same manner as before. Tables 36
to 39 contain the pooled constrained regressions for each state and
Table 40 contains the summary statistics for the unconstrained regressions.

TABLE 36

REGRESSION ANALYSIS OF PENNSYLVANIA DATA
POOLED ACROSS YEARS 1972 - 1976

Variable	Coefficient	Standard error	Coefficient	Standard error
Dependent:	Partial payments > 0		Partial payments > I	
Independent:				
Constant	-0.076	0.037	-0.070	- .030
Agriculture, Forestry, Fishing	- .017	0.014	-0.014	0.012
Mining	0.059	0.007	0.002	0.006
Construction	0.187	0.006	0.148	0.005
Manufacturing	0.005	0.007	-0.023	0.006
Wholesale trade	0.136	0.011	0.085	0.009
Retail trade	-0.131	0.017	-0.089	0.014
Finance, Insurance	0.020	0.010	0.019	0.008
Services (including agriculture)	-0.043	0.016	-0.026	0.013
Public administration . . .	0.013	0.031	0.012	0.025
Age	0.009	0.001	0.005	0.0008
Age^2 . $(x10^{-4})$	-0.817	0.111	-0.374	0.090
White	0.029	0.032	0.001	0.026
Black	-0.051	0.033	-0.045	0.027
Female	0.156	0.005	0.128	0.004
Weekly benefit amount $(x10^{-4})$	0.012	0.011	0.012	0.009
Coefficient of determination	0.098		0.110	
Standard error of regression	0.435		0.354	
F value	405.708		461.104	
Number of observations . .	56,016			

TABLE 37

REGRESSION ANALYSIS OF NEVADA DATA
POOLED ACROSS YEARS 1972 - 1976

Variable	Coefficient	Standard error	Coefficient	Standard error
Dependent:	Partial payments > 0		Partial payments > 1	
Independent:				
Constant	0.328	0.044	0.112	0.026
Professional, technical	-0.017	0.041	-0.019	0.024
	-0.035	0.036	-0.020	0.021
Clerical occupations	-0.050	0.035	-0.028	0.020
Service occupations	-0.039	0.035	-0.016	0.020
Processing occupations	-0.039	0.054	-0.009	0.031
Machine trades occupations.	-0.032	0.038	-0.036	0.022
Benchwork trades occupations	-0.081	0.042	-0.036	0.024
Structural work occupations	-0.062	0.035	-0.036	0.020
Miscellaneous	-0.037	0.035	-0.002	0.020
Agriculture, Forestry, Fishing	0.023	0.060	-0.038	0.035
Mining	0.023	0.013	-0.002	0.008
Construction	0.045	0.026	0.001	0.015
Manufacturing	0.029	0.020	0.019	0.011
Wholesale trade	0.086	0.018	0.015	0.011
Retail trade	0.012	0.019	-0.002	0.011
Finance, Insurance	0.034	0.010	0.006	0.006
Services	0.040	0.019	0.015	0.011
Public administration	0.009	0.021	-0.007	0.012
Age	0.002	0.001	-0.000	0.000
Age^2 . $(x10^{-4})$	-0.223	0.121	-0.273	0.076
White	0.012	0.018	0.009	0.010
Black	-0.034	0.021	-0.003	0.012
Female	-0.032	0.009	-0.008	0.005
Weekly benefit amt $(x10^{-4})$.	-0.343	0.018	-0.088	0.010
R^2	0.057		0.016	
Standard error of regression	0.317		0.183	
F Value	21.782		6.004	
Number of observations	8,745			

TABLE 38

REGRESSION ANALYSIS OF OREGON DATA
POOLED ACROSS YEARS 1972 - 1976

Variable	Coefficient	Standard error	Coefficient	Standard error
Dependent:	Partial payments > 0		Partial payments > 1	
Independent:				
Constant	0.084	0.041	-0.009	0.025
Professional, technical . . {	0.017	0.025	0.040	0.015
	-0.057	0.021	-0.018	0.013
Clerical occupations . . .	-0.039	0.016	-0.004	0.010
Service occupations	-0.021	0.018	-0.002	0.011
Processing occupations . .	-0.046	0.030	0.009	0.018
Machine trades occupations.	-0.024	0.017	-0.005	0.010
Benchwork trades occupations	-0.007	0.020	-0.006	0.012
Structural work occupations	-0.043	0.016	-0.020	0.009
Miscellaneous	-0.029	0.015	-0.009	0.009
Agriculture, Forestry, Fishing	0.000	0.032	-0.004	0.020
Mining	-0.004	0.015	-0.007	0.009
Construction	0.016	0.012	-0.008	0.008
Manufacturing	-0.034	0.015	-0.012	0.009
Wholesale trade	0.091	0.019	0.007	0.012
Retail trade	-0.033	0.024	-0.012	0.015
Finance, Insurance	0.004	0.019	0.018	0.012
Services	0.008	0.018	0.013	0.011
Public administration . . .	0.006	0.015	0.007	0.009
Age	0.003	0.001	0.002	0.0006
Age^2 . $(x10^{-4})$	-0.157	0.091	-0.158	0.055
White	-0.051	0.033	-0.009	0.020
Black	-0.083	0.046	0.001	0.028
Female	0.029	0.011	0.011	0.006
Weekly benefit amt $(x10^{-4})$.	0.023	0.017	0.001	0.010
R^2	0.016		0.012	
Standard error of regression	0.308		0.188	
F Value	4.716		3.325	
Number of observations . .	6,785			

TABLE 39

REGRESSION ANALYSIS OF ILLINOIS DATA
POOLED ACROSS YEARS 1975 - 1977

Variable	Coefficient	Standard error
Dependent:	Partial payments > 1	
Independent:		
Constant	--	--
Professional, technical	-.016	.019
	-.003	.019
Clerical occupations	.008	.013
Service occupations	-.022	.009
Processing occupations	.007	.012
Machine trades occupations	.125	.044
Benchwork trades occupations	.021	.012
Structural work occupations	-.006	.013
Miscellaneous	-.004	.013
Agriculture, Forestry, Fishing	.023	.011
Mining	.009	.009
Construction	.006	.010
Manufacturing	.015	.009
Wholesale trade	.012	.010
Retail trade	.001	.009
Finance, insurance	-.006	.009
Services	.001	.011
Public administration	.011	.009
Age	.001	.000
Age^2	.000	.000
White	.012	.006
Black	-.009	.008
Female	.010	.005
Benefit amount	.000	.000
R^2	.011	
Standard error of regression	.165	
F-Value	2.72	
Number of observations	5,770	

TABLE 40

SUMMARY STATISTICS FOR THE UNCONSTRAINED
REGRESSION MODEL, BY STATE

State	R^2	N	Number of variables
Nevada	.018	8,745	29
Oregon	.012	6,785	29
Pennsylvania . . .	.015	56,016	29
Illinois	--	5,770	29

The F-statistics corresponding to the test of no effects of ag-
gregate demand on the part-time work decision are presented in Table 41.

TABLE 41

F-TESTS OF THE HYPOTHESIS $H_o = \beta_{o,t} = \beta_o$

State	R^2 Constrained	R^2 Unconstrained	N	F
Nevada	.016	.018	8,745	4.452
Oregon	.012	.012	6,785	0.101
Pennsylvania	.110	.115	56,016	79.119
Illinois	.011	.011	5,770	5.837

The critical value of the F-statistic is 3.32, which leads us
to rejecting the hypotheses of no effect of aggregate demand for all
states except Oregon. The pattern of temporal effects indicated in

Table 42 is similar to the previous results: decreases in demand lead
to increased participation in part-time work in Nevada and Oregon,
but the reverse is true in Pennsylvania.

TABLE 42

UNCONSTRAINED REGRESSION COEFFICIENTS FROM
POOLED REGRESSIONS WITHIN STATES

State	Year			
	1973	1974	1975	1976
Nevada	.010	.110	.121	.111
Oregon	-.003	-.009	-.011	-.003
Pennsylvania	-.027	-.057	-.088	-.199
Illinois	--	--	-.018	-.012

Quantitatively these results indicate again that cyclical
fluctuations account for a predominant amount of the systematic part
of partial benefit receipt.

Summary and Conclusions

This report has investigated the impact of different UI benefit
taxation formulas on the probability of an individual receiving partial
benefits while unemployed. Our findings, based on a comparison of
over 70,000 records from four states, indicate that there are significant
differences in the supply of part-time workers across states and that
these differences are related to the parameters used in calculating
partial benefits. Specifically, part-time work is more frequent in
a state like Pennsylvania which has a high earnings disregard and less
frequent in a state such as Illinois which has a low disregard. This

finding suggests that one way to minimize work disincentives is to raise the level of disregard.

With regard to the comparison of a system which uses a disregard versus one that has a constant tax rate, we find only minor differences. Nevada consistently falls in the middle of the distribution of part-time work incentives. This is not surprising since, as reported earlier, the level of the tax rate influences labor supply (negatively) as does the level of the disregard (positively); hence, any empirical comparison will depend upon the actual levels of these parameters. These results indicate then that a 75 percent tax rate is, on average, equivalent to a disregard of about 1/3 of the weekly benefit amount.

These findings suggest that if it is desirable to increase the incentives for individuals to engage in part-time work, the most effective way would be to raise the disregard level in states which use such formulas, and lower the tax rate in states which use a constant tax rate. There do not appear to be any significant gains to be made by switching from one system to the other.

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